

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:**Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-002599**Date Inspected:** 08-Apr-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 630**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1530**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** See below**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** OBG/Tower**Summary of Items Observed:**

Caltrans Quality Assurance (QA) Inspector Sherri Brannon arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China to periodically monitor welding and Quality Control (QC) functions. While on site the QA Inspector observed and/or discovered the following.

New Tower Shop**Bay 1:**

QA Inspector Brannon randomly observed ZPMC personnel performing heat straightening on various tower plates.

Cause for heat straightening mill induced distortion. Heat Straightening is performed by flame straightening using oxygen acetylene.

Bay 1 and Bay 2:

QA Inspector Brannon randomly observed ZPMC personnel CNC torch cutting 75% natural and 25% oxygen for various pieces for the tower.

89 Meter Mock-up - Bay 1:

QA Inspector Brannon observed tower mock-up to be idle during this shift.

Tower Shaft Skin Plates - Bay 1:

QA Inspector Brannon randomly observed ZPMC qualified welder's Mrs. Xu Yan ID#052917 ID# and Mr. Chen Hongxia ID# 040460 groove welding fill/cover passes at the weld joint SSD1-SA173 A/K-13B, joining SA173 (S) to P219 (S), Skin E and SSD1-SA159 D/J-1A, joining SA159 (S) to P89 (S), Skin A respectively. Mrs. Xu and

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Mr. Chen was observed welding in the 1G (flat) position utilizing submerged arc welding (SAW) process with a 4.8mm diameter electrode, filler metal brand EM12K, class JW-3 machine. QA Inspector Brannon observed the ZPMC QC Inspector Mr. Zhu Zhong Hai verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector Brannon observed preheat and welding parameters measured by the QC CWI Inspector Mr. Zhu Zhong Hai to be: a minimum preheat temperature of 110°C and welding parameters amps of 700/680, volts of 32.8/33.6, and a travel speed of 630/645 mm/min respectively. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2221-B-U3c-S.

Tower Shaft Skin Plates - Bay 1 and Bay2: (UT repair)

QA Inspector Brannon randomly observed ZPMC qualified welder's Mr. Wang Jun ID#040421 and Mr. Chang Chuancang ID# 053870 groove welding fill/cover passes at the weld joint SSD1-SA15 A/F-13B, joining SA15 (S) to P117 (S), skin A and SSD1-SA16 F/G-6A, joining SA16 (S) to P149 (S), skin E respectively. Mr. Xia, Mr. Liu, Mrs. Xu and Mr. Chang was observed welding in the 1G (flat) position utilizing a flux corded arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic. QA Inspector Brannon observed the ZPMC QC Inspector Mr. Xu Le Feng verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector Brannon observed preheat and welding parameters measured by the QC CWI Inspector Mr. Zhu Zhong Hai to be: a minimum preheat temperature of 110°C and welding parameters amps of 315/305, volts of 31.0/30.8, a travel speed of 336/330 mm/min and a gas flow of 22L/min respectively. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-345-FCAW-1G(1F)-Repair.

Deck Panels Bay-3

QA Inspector Brannon randomly observed ZPMC qualified welder Mr. Yuan Fengchuan ID#059355 tack welding joining deck panel DP489-001-007, DP273-001-007, DP327-001-009 and DP327-002-009. Mr. Yun was observed welding in the 1G (flat) position utilizing flux cored arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand Supercored 71H, class E71T-1. QA Inspector Brannon observed the ZPMC QC Inspector Mr. Huang Wei Pang verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector Brannon observed preheat and welding parameters measured by the ZPMC QC to be: preheat temperature of 20°C and welding parameters amps of 254 volts of 28.2, a travel speed of 535 mm/min and a gas flow of 21L/min respectively. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2231-B-U2-F-1.

OBG/Tower Sub-Assembly

Bay 2

77 & 144 Meter Mock-up:

QA Inspector Brannon observed tower mock-up to be idle during this shift. QA Inspector Brannon also, randomly observed ZPMC personnel CNC torch cutting with 75% natural gas and 25% oxygen for interior splice plate for various tower elevations.

Bay 3-OBG side panel (Gantry 1):

QA Inspector Brannon randomly observed ZPMC qualified welders Mr. Liz Hao Qian ID#048810, Mr. Xin Meng ID#053742 and Mr. Sun Ti Yu ID#054459 fillet welding joining T-stiffeners to side panel plate for SP420-001 weld joints 001~010, SP421-001 weld joints 001~010 and SP423-001 weld joints 001~010. Mr. Liz, Mr. Xin and

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Mr. Sun was observed welding in the 2F (horizontal) position utilizing flux cored arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand Supercored 71H, class E71T-1. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2132-3.

Bay 3-OBG side/bottom panel:

QA Inspector Brannon randomly observed ZPMC qualified welders, tack welding various T stiffeners plate to SP322-001, weld joints 001~010 utilizing a shielded metal arc welding (SMAW) process with a 4.0mm diameter electrode, filler metal brand E7018, class TL508. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-P-2112-FCM.

Bay 4 – Heat straightening side panel:

QA Inspector Brannon randomly observed ZPMC personnel performing heat straightening on various side/bottom/edge panels and tower diaphragm plates. Side/bottom/edge panels cause for heat straightening welding distortion and tower diaphragm plates cause for heat straightening mill induced. Heat Straightening is performed by flame straightening using oxygen acetylene or natural gas using a hand torch.

Bay 4 Tower 33 Meter Elevation:

QA Inspector Brannon randomly observed ZPMC welder Mrs. Gu Cai Hong ID #053748 welding fill/cover pass's joining SA322 (N) to P283 (N) weld joint # NSD1 SA332 A/B-1B/2B. Mrs. Gu was observed welding in the 1G (flat) position utilizing a submerged arc welding (SAW) process with a 4.0mm diameter electrode, filler metal brand LA-85, class ENi5, machine. QA Inspector Brannon observed the ZPMC QC CWI Inspector Mr. Zhao Chen Sun verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector observed preheat and welding parameters measured by the QC CWI Inspector Zhao Chen Sun to be: preheat temperature of 180°C and welding parameters amps of 635, volts of 30.7, and a travel speed of 500. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-3221-B-U3c-S-1.

The following digital photograph below illustrates observation of the activities being performed.



Summary of Conversations:

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No relevant conversations to report.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

Inspected By:	Brannon,Sherri	Quality Assurance Inspector
Reviewed By:	Cuellar,Robert	QA Reviewer
